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SCIENCE

NEW YORK, FEBRUARY 6, 1891.

THE STUDY OF INDIAN LANGUAGES.

As the number of those interested in the study of Indian languages increases, the need of a complete classification of Indian languages and dialects becomes more and more apparent. The investigations necessary to such a classification were begun many years ago by the Bureau of Ethnology, and from time to time field investigations have been conducted with especial reference to it. Sufficient progress has been made to permit the publication of a classification of all Indian languages in the territory north of Mexico, together with a map displaying the area occupied by the several families.

The classification is primarily based upon an examination of the linguistic material relating to the subject. Mr. James C. Pilling has been engaged in the preparation of the bibliography of this literature, and several volumes of the bibliography have already been published. The literature itself is classified by him as far as possible in compliance with this scheme. Secondarily the classification is based on a large body of linguistic material now in the archives of the bureau, which also received notice in Mr. Pilling's "Bibliography."

Mr. H. W. Henshaw is engaged on the tribal synonymy, and a large volume on this subject is approaching completion. The tribal synonymy is also based upon this classification. The classification itself is the work of the Director of the bureau.

It will of course be understood that such a classification must be purely tentative, and that it will require modification as new material is acquired by students, and as present views in regard to the relationship of existing families may be changed by further study. All the material relating to the classification will appear in the seventh annual report of the bureau, now in the hands of the printer.

The subject is deemed of sufficient interest and importance to warrant the present publication of the principles upon which the classification has been based, and of the rules which have guided in the selection of family names, together with a list of the families.

The languages spoken by the pre-Columbian tribes of North America were many and diverse. Into the regions occupied by these tribes, travellers, traders, and missionaries have penetrated in advance of civilization, and civilization itself has marched across the continent at a rapid rate. Under these conditions, the languages of the various tribes have received much study. Many extensive works have been published, embracing grammars and dictionaries; but a far greater number of minor vocabularies have been collected, and very many have been published. In addition to these, the Bible, in whole or in part, and various religious books and school-books, have been translated into Indian tongues, to be used for purposes of instruction, and newspapers have been published in the Indian languages. Altogether the literature in these languages, together with the literature relating to it, is of vast extent. While the

materials seem thus to be abundant, the student of Indian languages finds the subject to be one of great magnitude, difficulties arising from the following conditions:—

1. A great number of linguistic stocks or families is discovered.

2. The boundaries between the different stocks of languages are not immediately apparent, from the fact that many tribes of diverse stocks have had more or less association, and to some extent linguistic materials have been borrowed, and thus have passed out of the exclusive possession of cognate peoples.

3. Where many peoples, each few in number, are thrown together, an intertribal language is developed. To a large extent this is gesture speech; but to a limited extent useful and important words are adopted by various tribes, and out of this material an intertribal "jargon" is established. Travellers and all others, who do not thoroughly study a language, are far more likely to acquire this jargon speech than the real speech of the people; and the tendency to base relationship upon such jargons has led to confusion.

4. This tendency to the establishment of an intertribal jargon was greatly accelerated on the advent of the white man, for thereby many tribes were pushed from their ancestral homes, and tribes were mixed with tribes. As a result, new relations and new industries, especially of trade, were established, and the new associations of tribe with tribe and of the Indians with Europeans led very often to the development of quite elaborate jargon languages. All of these have a tendency to complicate the study of the Indian tongues by comparative methods.

The difficulties inherent in the study of languages, together with the imperfect material and the complicating conditions that have arisen by the spread of civilization over the country, combine to make the problem one not readily resolved.

In view of the amount of material on hand, the comparative study of the languages of North America has been strangely neglected, though perhaps this is explained by reason of the difficulties which have been pointed out. And the attempts which have been made to classify them has given rise to much confusion, for the following reasons: first, later authors have not properly recognized the work of earlier laborers in the field; second, the attempt has more frequently been made to establish an ethnic classification than a linguistic classification, and linguistic characteristics have been confused with biotic peculiarities, arts, habits, customs, and other human activities, so that often radical differences of language have been ignored, and slight differences have been held to be of primary value.

The attempts at a classification of these languages and also at a classification of races have led to the development of a complex, mixed, and inconsistent synonymy, which must first be unravelled and a selection of standard names made therefrom, according to fixed principles.

It is manifest that until proper rules are recognized by scholars the establishment of a determinate nomenclature is impossible. It will therefore be well to set forth the rules that have here been adopted, together with brief reasons for

the same, with the hope that they will commend themselves to the judgment of other persons engaged in researches relating to the languages of North America.

A fixed nomenclature in biology has been found not only to be advantageous, but to be a prerequisite to progress in research, as the vast multiplicity of facts, still ever accumulating, would otherwise overwhelm the scholar. In philological classification, fixity of nomenclature is of corresponding importance; and while the analogies between linguistic and biotic classification are quite limited, many of the principles of nomenclature which biologists have adopted having no application in philology, still, in some important particulars the requirements of all scientific classifications are alike, and, though many of the nomenclatural points met with in biology will not occur in philology, some of them do occur, and may be governed by the same rules.

Perhaps an ideal nomenclature in biology may sometimes be established, as attempts have been made to establish such a system in chemistry; and perhaps such an ideal system may eventually be established in philology. Be that as it may, the time has not yet come even for its suggestion. What is now needed are rules of some kind leading scholars to use the same terms for the same things; and it would seem to matter little in the case of linguistic stocks what the nomenclature is, provided it becomes denotive and universal.

In treating of the languages of North America, it has been suggested that the names adopted should be the names by which the people recognize themselves; but this is a rule of impossible application, for, where the branches of a stock diverge very greatly, no common name for the people can be found. Again, it has been suggested that names which are to go permanently into science should be simple and euphonic. This also is of impossible application, for simplicity and euphony are largely questions of personal taste; and he who has studied many languages loses speedily his idiosyncrasies of likes and dislikes, and learns that words foreign to his vocabulary are not necessarily barbaric.

Biologists have decided that he who first distinctly characterizes and names a species or other group shall thereby cause the name thus used to become permanently affixed, but under certain conditions adapted to a growing science which is continually revising its classification. This law of priority may well be adopted by philologists.

By the application of the law of priority it will occasionally happen that a name must be taken which is not wholly unobjectionable, or which could be much improved; but, if names may be modified for any reason, the extent of change that may be wrought in this manner is unlimited, and such modifications would ultimately become equivalent to the introduction of new names, and a fixed nomenclature would thereby be overthrown. The rule of priority has therefore been adopted.

Permanent biologic nomenclature dates from the time of Linnæus, simply because this great naturalist established the binominal system and placed scientific classification upon a sound and enduring basis. As Linnæus is to be regarded as the founder of biologic classification, so Gallatin may be considered the founder of systematic philology relating to the North American Indians. Before his time much linguistic work had been accomplished; and scholars owe a lasting debt of gratitude to Barton, Adelung, Pickering, and others. But Gallatin's work marks an era in American linguistic science from the fact that he so thoroughly introduced comparative methods, and because he circumscribed the boundaries of many families, so that a large part of his

work remains and is still to be considered sound. There is no safe resting-place anterior to Gallatin, because no scholar prior to his time had properly adopted comparative methods of research, and because no scholar was privileged to work with so large a body of material. It must further be said of Gallatin that he had a very clear conception of the task he was performing, and brought to it both learning and wisdom. Gallatin's work has therefore been taken as the starting-point, back of which we may not go in the historic consideration of the systematic philology of North America. The point of departure, therefore, is the year 1836, when Gallatin's "Synopsis of Indian Tribes" appeared in Vol. II. of the "Transactions of the American Antiquarian Society."

It is believed that a name should be simply a denotive word, and that no advantage can accrue from a descriptive or connotive title. It is therefore desirable to have the names as simple as possible, consistent with other and more important considerations. For this reason it has been found impracticable to recognize as family names designations based on several distinct terms, such as descriptive phrases, and words compounded from two or more geographic names. Such phrases and compound words have been rejected.

There are many linguistic families in North America, and in a number of them there are many tribes speaking diverse languages. It is important, therefore, that some form should be given to the family name by which it may be distinguished from the name of a single tribe or language. In many cases some one language within a stock has been taken as the type, and its name given to the entire family; so that the name of a language and that of the stock to which it belongs are the same. This is inconvenient, and leads to confusion. For such reasons it has been decided to give each family name the termination "an" or "ian."

Conforming to the principles thus enunciated, the following rules have been formulated:—

1. The law of priority relating to the nomenclature of the systematic philology of the North American tribes shall not extend to authors whose works are of date anterior to the year 1836.
2. The name originally given by the founder of a linguistic group to designate it as a family or stock of languages shall be permanently retained to the exclusion of all others.
3. No family name shall be recognized if composed of more than one word.
4. A family name, once established, shall not be cancelled in any subsequent division of the group, but shall be retained in a restricted sense for one of its constituent portions.
5. Family names shall be distinguished as such by the termination "an" or "ian."
6. No name shall be accepted for a linguistic family unless used to designate a tribe or group of tribes as a linguistic stock.
7. No family name shall be accepted unless there is given the habitat of the tribe or tribes to which it is applied.
8. The original orthography of a name shall be rigidly preserved, except as provided for in Rule 3, and unless a typographical error is evident.

The terms "family" and "stock" are here applied interchangeably to a group of languages that are supposed to be cognate.

A single language is called a stock or family when it is not found to be cognate with any other language. Languages are said to be cognate when such relations between

them are found that they are supposed to have descended from a common ancestral speech.

The evidence of cognation is derived exclusively from the vocabulary. Grammatical similarities are not supposed to furnish evidence of cognation, but to be phenomena, in part relating to stage of culture, and in part adventitious. It must be remembered that extreme peculiarities of grammar, like the vocalic mutations of the Hebrew or the monosyllabic separation of the Chinese, have not been discovered among Indian tongues. It therefore becomes necessary, in the classification of Indian languages into families, to neglect grammatical structure, and to consider lexical elements only. But this statement must be clearly understood. It is postulated that in the growth of languages new words are formed by combination, and that these new words change by attrition to secure economy of utterance, and also by assimilation (analogy) for economy of thought. In the comparison of languages for the purposes of systematic philology it often becomes necessary to dismember compounded words for the purpose of comparing the more primitive forms thus obtained. The paradigmatic words considered in grammatical treatises may often be the very words which should be dissected to discover in their elements primary affinities; but the comparison is still lexic, not grammatical.

A lexic comparison is between vocal elements: a grammatical comparison is between grammatical methods, such, for example, as gender systems. The classes into which things are relegated by distinction of gender may be animate and inanimate, and the animate may subsequently be divided into male and female, and these two classes may ultimately absorb, in part at least, inanimate things. The growth of a system of genders may take another course. The animate and inanimate may be subdivided into the standing; the sitting, and the lying, or into the moving, the erect, and the reclined; or, still further, the superposed classification may be based upon the supposed constitution of things, as the fleshy, the woody, the rocky, the earthy, the watery. Thus the number of genders may increase, while farther on in the history of a language the genders may decrease so as almost to disappear. All of these characteristics are in part adventitious; but to a large extent the gender is a phenomenon of growth, indicating the stage to which the language has attained. A proper case system may not have been established in a language by the fixing of case particles, or, having been established, it may change by the increase or diminution of the number of cases. A tense system also has a beginning, a growth, and a decadence. A mode system is variable in the various stages of the history of a language. In like manner a pronominal system undergoes changes. Particles may be prefixed, infixes, or affixed in compounded words, and which one of these methods will finally prevail can be determined only in the later stage of growth. All of these things are held to belong to the grammar of a language, and to be grammatical methods distinct from lexic elements.

With terms thus defined, languages are supposed to be cognate when fundamental similarities are discovered in their lexic elements. When the members of a family of languages are to be classed in subdivisions and the history of such languages investigated, grammatical characteristics become of primary importance. The words of a language change by the methods described, but the fundamental elements or roots are more enduring. Grammatical methods also change, perhaps even more rapidly than words; and the changes may go on to such an extent that primitive methods are entirely lost, there being no radical grammatical

elements to be preserved. Grammatical structure is but a phase or accident of growth, and not a primordial element of language. The roots of a language are its most permanent characteristics; and while the words which are formed from them may change so as to obscure their elements, or in some cases even to lose them, it seems that they are never lost from all, but can be recovered in large part. The grammatical structure or plan of a language is forever changing, and in this respect the language may become entirely transformed.

Below is a list of the fifty-eight families, alphabetically arranged, with a general statement of the habitat of each. Most of the names contained in the list need no explanation, as they are familiar to linguistic students, having appeared years ago in the writings of Gallatin, Latham, Prichard, Scouler, Turner, and others. Several of the names are new. Thus, the name "Chumashan" is applied to the group of languages hitherto generally known under the term "Santa Barbara," and includes the dialects formerly spoken at the several missions along the Santa Barbara Channel, California, and is derived from the name of the Santa Rosa Island tribe. This language is now spoken by a score or more of Indians.

The Esselenian family applies to the language of a tribe, possibly a small group of tribes, on and south of Monterey Bay. Until recently the language has been supposed to belong to the Moquelumnan family, but is now believed to represent a distinct group. The family name is derived from the name of the Esselen tribe. The language is now practically extinct, but a short vocabulary was collected by Mr. Henshaw in 1888.

The Yanan family includes one language only, that of the tribe called by Powers, Gatschet, and others, "Nozi" or "Noces." The word means "people" in their own language.

List of Families.

- Adaizan.—On Red River, Texas.
- Algonquian.—Of the North Atlantic seaboard, and west through the Northern States, Lake region, and Canada, to the Rocky Mountains.
- Athapascan.—Of the interior of British America; isolated communities on the Columbia River, Oregon, California, Arizona, and New Mexico.
- Attacapan.—Area on Texas coast.
- Beothukan.—Portion of Newfoundland.
- Caddoan.—Of northern Nebraska, western Arkansas, southern Indian Territory, western Louisiana, and northern Texas.
- Chimakuan.—Of part of the southern shore of Puget Sound.
- Chimarikan.—On New and Trinity Rivers, northern California.
- Chimmesyan.—The region of Nasse and Skeena Rivers, west coast British Columbia.
- Chinookan.—Banks of the Columbia River as far up as the Dalles.
- Chitimachan.—About Lake Barataria, southern Louisiana.
- Chumashan.—Coast of California from about the 34th parallel to a little north of the 35th.
- Coahuiltecan.—Of south-western Texas and north-eastern Mexico.
- Copehan.—West of the Sacramento as far north as Mount Shasta, California.
- Costanoan.—Coast of California from the Golden Gate south to Monterey Bay.
- Eskimauan.—East and west coasts of Greenland; coast of Labrador as far south as Hamilton Inlet; and the Arc-

tic coast westward, including part of the shore of Hudson Bay, to western Alaska, including the Aleutian Islands.

Esselenian.—Coast of California from Monterey Bay to Santa Lucia Mountain.

Iroquoian.—The St. Lawrence River region north of Lake Erie, northern Pennsylvania, State of New York, the lower Susquehanna in Pennsylvania and Maryland, north-eastern North Carolina, south-western West Virginia, western North Carolina, and most of Kentucky and Tennessee.

Kalapooian.—Valley of the Willamette River, Oregon.

Karankawan.—Texas coast around Matagorda Bay.

Keresan.—Upper Rio Grande, and on the Jemez and San José Rivers, New Mexico.

Kiowan.—Upper Arkansas and Purgatory Rivers, Colorado.

Kitunahan.—Cootenay River region, mostly in British Columbia.

Koluschan.—North-west coast from 55° to 60° north latitude.

Kulanapan.—Russian River region, and California coast from Bodega Head north to about latitude 39° 30'.

Kusan.—Coast of middle Oregon, Coos Bay and River, and at mouth of Coquille River, Oregon.

Lutuamian.—Region of Klamath Lakes and Sprague River, Oregon.

Mariposan.—Interior of California, east of the Coast Range, and south of Tulare Lake, in a narrow strip to below Tulare Lake, north as far as the Fresno River.

Moquelumnian.—Interior of California, bounded on the north by the Cosumnes River, on the south by the Fresno, on the east by the Sierras, and on the west by the San Joaquin; an area north of San Francisco and San Pablo Bays as far as Bodega Head and the head waters of Russian River.

Muskogean.—The Gulf States from the Savannah River and the Atlantic west to the Mississippi, and from the Gulf to the Tennessee River.

Natchesan.—On St. Catherine Creek, near the site of the present city of Natches.

Palaihnihan.—Drainage of Pit River in north-eastern California.

Piman.—On the Gila River about 160 miles from its mouth, and on the San Pedro, in Arizona, and in Mexico on the Gulf of California.

Pujunan.—California; east bank of the Sacramento about 100 miles from its mouth, north to Pit River, eastward nearly to the borders of the State.

Quoratean.—Lower Klamath River, Oregon, from Happy Camp to the junction of the Trinity and Salmon River valley.

Salinan.—Region around the San Antonio and San Miguel missions, California.

Salishan.—North-western part of Washington, including Puget Sound, eastern Vancouver Island to about midway its length; coast of British Columbia to Bute Inlet; and the region of Bentinck Arm and Dean Inlet.

Sastean.—Middle Klamath River, northern California.

Shahaptian.—Upper Columbia River, and its tributaries in northern Oregon and Idaho and southern Washington.

Shoshonean.—Occupying generally the Great Interior Basin of the United States, as far east as the Plains, and reaching the Pacific in Los Angeles, San Bernardino, and San Diego Counties, California.

Siouan.—The Dakotas, parts of Minnesota, Wisconsin, Iowa, Nebraska, Kansas, Missouri, Arkansas, Indian Territory, with isolated colonies in Alabama (Biloxi), the Carolinas (Catawba), and borders of Virginia and North Carolina (Tutelo).

Skittagetan.—Queen Charlotte Islands, Forrester Island, and south-eastern part of Prince of Wales Island.

Takilman.—Oregon coast about the lower Rogue River.

Tañoan.—Rio Grande and tributary valleys, from about 30° to about 36° 30'.

Timuquanan.—Florida.

Tonikan.—Lower Yazoo River, Mississippi.

Tonkawan.—Western and south-western parts of Texas.

Uchean.—Lower Savannah River and perhaps the South Carolina coast.

Wailatpuan.—Lower Walla Walla River, Oregon, and about Mounts Hood and Jefferson.

Wakashan.—West coast of Vancouver Island, and north-west tip of Washington.

Washoan.—Eastern base of the Sierras, south of Reno, Nevada, to the lower end of Carson valley.

Weitspekan.—Lower Klamath River, Oregon, from the mouth of the Trinity.

Wishoskan.—Coast of California from just below the mouth of Eel River to a little north of Mad River.

Yakonan.—Along the lower Yaquina, Alsea, Siuslaw, and Umpqua Rivers, Oregon.

Yanan.—Chiefly in the southern part of Shasta County, California.

Yukian.—Round valley, California, and west to the coast.

Yuman.—Lower California; the Colorado from its mouth to Cataract Creek, the Gila and tributaries as far east as the Tonto Basin, Arizona.

Zuñian.—A small area on Zuñi River, western New Mexico.

J. W. POWELL.

NOTES AND NEWS.

THE director of the central dispensary at Bagdad has sent to *La Nature* a specimen of an edible substance which fell during an abundant shower in the neighborhood of Mardin and Diarbékir (Turkey in Asia) in August, 1890. The rain which accompanied the substance fell over a surface of about ten kilometres in circumference. The inhabitants collected the "manna," and made it into bread, which is said to have been very good, and to have been easily digested. The specimen sent to *La Nature* is composed of small spherules, according to *Nature* of Jan. 15. Yellowish on the outside, it is white within. Botanists who have examined it say that it belongs to the family of lichens known as *Lecanora esculenta*. According to Decaisne, this lichen, which has been found in Algeria, is most frequently met with on the most arid mountains of Tartary, where it lies among pebbles from which it can be distinguished only by experienced observers. It is also found in the desert of the Kirghizes. The traveller Parrot brought to Europe specimens of a quantity which had fallen in several districts of Persia at the beginning of 1828. He was assured that the ground was covered with the substance to the height of two decimetres, that animals ate it eagerly, and that it was collected by the people.

—Mr. William Warren supplies some information to *Engineering* regarding his work in the search for seams of coal in Tonquin, which, as the result of the late wars there, is now part of the French territory. The coal, of which there is an extensive field, will add greatly to the importance of the territorial acquisition to the French in view of its importance as a coaling station, and will afford a further evidence of the varying fortunes of politicians, as M. Ferry, rising from the obloquy into which he fell as a result of the public disapproval of the continuance of the campaign, will now find favor and commendation for foresight. The seams of